

§ 30.70

10 CFR Ch. I (1–1–10 Edition)

30.32, 30.33, 30.37, 30.38, 30.39, 30.61, 30.62, 30.63, 30.64, 30.70, 30.71, and 30.72.

[57 FR 55072, Nov. 24, 1992, as amended at 73 FR 42673, July 23, 2008]

SCHEDULES

§ 30.70 Schedule A—Exempt concentrations.

[See footnotes at end of this table]

| Element (atomic number) | Isotope | Col. I | Col. II |
|-------------------------|--------------------------|--|---|
| | | Gas concentration $\mu\text{Ci}/\text{ml}^1$ | Liquid and solid concentration $\mu\text{Ci}/\text{ml}^2$ |
| Antimony (51) | Sb 122 | | 3×10^{-4} |
| | Sb 124 | | 2×10^{-4} |
| | Sb 125 | | 1×10^{-3} |
| Argon (18) | A 37 | 1×10^{-3} . | |
| | A 41 | 4×10^{-7} . | |
| Arsenic (33) | As 73 | | 5×10^{-3} |
| | As 74 | | 5×10^{-4} |
| | As 76 | | 2×10^{-4} |
| | As 77 | | 8×10^{-4} |
| Barium (56) | Ba 131 | | 2×10^{-3} |
| | Ba 140 | | 3×10^{-4} |
| Beryllium (4) | Be 7 | | 2×10^{-2} |
| Bismuth (83) | Bi 206 | | 4×10^{-4} |
| Bromine (35) | Br 82 | 4×10^{-7} | 3×10^{-3} |
| | | | |
| Cadmium (48) | Cd 109 | | 2×10^{-3} |
| | Cd 115m | | 3×10^{-4} |
| | Cd 115 | | 3×10^{-4} |
| Calcium (20) | Ca 45 | | 9×10^{-5} |
| | Ca 47 | | 5×10^{-4} |
| | | | |
| Carbon (6) | C 14 | 1×10^{-6} | 8×10^{-3} |
| Cerium (58) | Ce 141 | | 9×10^{-4} |
| | Ce 143 | | 4×10^{-4} |
| | Ce 144 | | 1×10^{-4} |
| | | | |
| Cesium (55) | Cs 131 | | 2×10^{-2} |
| | Cs 134m | | 6×10^{-2} |
| | Cs 134 | | 9×10^{-5} |
| Chlorine (17) | Cl 38 | 9×10^{-7} | 4×10^{-3} |
| Chromium (24) | Cr 51 | | 2×10^{-2} |
| Cobalt (27) | Co 57 | | 5×10^{-3} |
| | Co 58 | | 1×10^{-3} |
| | Co 60 | | 5×10^{-4} |
| Copper (29) | Cu 64 | | 3×10^{-3} |
| Dysprosium (66) | Dy 165 | | 4×10^{-3} |
| | Dy 166 | | 4×10^{-4} |
| Erbium (68) | Er 169 | | 9×10^{-4} |
| | Er 171 | | 1×10^{-3} |
| Europium (63) | Eu 152 | | 6×10^{-4} |
| | (T/2=9.2 Hrs). Eu 155 | | 2×10^{-3} |
| Fluorine (9) | F 18 | 2×10^{-6} | 8×10^{-3} |
| Gadolinium (64) | Gd 153 | | 2×10^{-3} |
| | Gd 159 | | 8×10^{-4} |
| Gallium (31) | Ga 72 | | 4×10^{-4} |
| Germanium (32) | Ge 71 | | 2×10^{-2} |
| Gold (79) | Au 196 | | 2×10^{-3} |
| | Au 198 | | 5×10^{-4} |
| | Au 199 | | 2×10^{-3} |
| Hafnium (72) | Hf 181 | | 7×10^{-4} |
| Hydrogen (1) | H 3 | 5×10^{-6} | 3×10^{-2} |
| Indium (49) | In 113m | | 1×10^{-2} |
| | In 114m | | 2×10^{-4} |
| Iodine (53) | I 126 | 3×10^{-9} | 2×10^{-5} |
| | I 131 | 3×10^{-9} | 2×10^{-5} |
| | I 132 | 8×10^{-8} | 6×10^{-4} |
| | I 133 | 1×10^{-8} | 7×10^{-5} |
| | I 134 | 2×10^{-7} | 1×10^{-3} |
| Iridium (77) | Ir 190 | | 2×10^{-3} |

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[See footnotes at end of this table]

| Element (atomic number) | Isotope | Col. I | Col. II |
|--------------------------|---------|--|---|
| | | Gas concentration μCi/ml ¹ | Liquid and solid concentration μCi/ ml ² |
| Iron (26) | Ir 192 | | 4×10 ⁻⁴ |
| | Ir 194 | | 3×10 ⁻⁴ |
| | Fe 55 | | 8×10 ⁻³ |
| | Fe 59 | | 6×10 ⁻⁴ |
| Krypton (36) | Kr 85m | 1×10 ⁻⁶ | |
| | Kr 85 | 3×10 ⁻⁶ | |
| Lanthanum (57) | La 140 | | 2×10 ⁻⁴ |
| Lead (82) | Pb 203 | | 4×10 ⁻³ |
| Lutetium (71) | Lu 177 | | 1×10 ⁻³ |
| Manganese (25) | Mn 52 | | 3×10 ⁻⁴ |
| | Mn 54 | | 1×10 ⁻³ |
| | Mn 56 | | 1×10 ⁻³ |
| Mercury (80) | Hg 197m | | 2×10 ⁻³ |
| | Hg 197 | | 3×10 ⁻³ |
| | Hg 203 | | 2×10 ⁻⁴ |
| Molybdenum (42) | Mo 99 | | 2×10 ⁻³ |
| Neodymium (60) | Nd 147 | | 6×10 ⁻⁴ |
| | Nd 149 | | 3×10 ⁻³ |
| Nickel (28) | Ni 65 | | 1×10 ⁻³ |
| Niobium (Columbium) (41) | Nb 95 | | 1×10 ⁻³ |
| | Nb 97 | | 9×10 ⁻³ |
| Osmium (76) | Os 185 | | 7×10 ⁻⁴ |
| | Os 191m | | 3×10 ⁻² |
| | Os 191 | | 2×10 ⁻³ |
| | Os 193 | | 6×10 ⁻⁴ |
| | Pd 103 | | 3×10 ⁻³ |
| Palladium (46) | Pd 109 | | 9×10 ⁻⁴ |
| | P 32 | | 2×10 ⁻⁴ |
| Phosphorus (15) | Pt 191 | | 1×10 ⁻³ |
| Platinum (78) | Pt 193m | | 1×10 ⁻² |
| | Pt 197m | | 1×10 ⁻² |
| | Pt 197 | | 1×10 ⁻³ |
| | K 42 | | 3×10 ⁻³ |
| Potassium (19) | Pr 142 | | 3×10 ⁻⁴ |
| Praseodymium (59) | Pr 143 | | 5×10 ⁻⁴ |
| | Pm 147 | | 2×10 ⁻³ |
| Promethium (61) | Pm 149 | | 4×10 ⁻⁴ |
| Rhenium (75) | Re 183 | | 6×10 ⁻³ |
| | Re 186 | | 9×10 ⁻⁴ |
| | Re 188 | | 6×10 ⁻⁴ |
| | Rh 103m | | 1×10 ⁻¹ |
| Rhodium (45) | Rh 105 | | 1×10 ⁻³ |
| Rubidium (37) | Rb 86 | | 7×10 ⁻⁴ |
| Ruthenium (44) | Ru 97 | | 4×10 ⁻⁴ |
| | Ru 103 | | 8×10 ⁻⁴ |
| | Ru 105 | | 1×10 ⁻³ |
| | Ru 106 | | 1×10 ⁻⁴ |
| Samarium (62) | Sm 153 | | 8×10 ⁻⁴ |
| Scandium (21) | Sc 46 | | 4×10 ⁻⁴ |
| | Sc 47 | | 9×10 ⁻⁴ |
| | Sc 48 | | 3×10 ⁻⁴ |
| Selenium (34) | Se 75 | | 3×10 ⁻³ |
| Silicon (14) | Si 31 | | 9×10 ⁻³ |
| Silver (47) | Ag 105 | | 1×10 ⁻³ |
| | Ag 110m | | 3×10 ⁻⁴ |
| | Ag 111 | | 4×10 ⁻⁴ |
| Sodium (11) | Na 24 | | 2×10 ⁻³ |
| Strontium (38) | Sr 85 | | 1×10 ⁻⁴ |
| | Sr 89 | | 1×10 ⁻⁴ |
| | Sr 91 | | 7×10 ⁻⁴ |
| | Sr 92 | | 7×10 ⁻⁴ |
| | S 35 | 9×10 ⁻⁸ | 6×10 ⁻⁴ |
| Sulfur (16) | Ta 182 | | 4×10 ⁻⁴ |
| Tantalum (73) | Tc 96m | | 1×10 ⁻¹ |
| Technetium (43) | Tc 96 | | 1×10 ⁻³ |
| | Te 125m | | 2×10 ⁻³ |
| Tellurium (52) | Te 127m | | 6×10 ⁻⁴ |
| | Te 127 | | 3×10 ⁻³ |
| | Te 129m | | 3×10 ⁻⁴ |

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[See footnotes at end of this table]

| Element (atomic number) | Isotope | Col. I | Col. II |
|---|---------------|--|---|
| | | Gas concentration μCi/ml ¹ | Liquid and solid concentration μCi/ ml ² |
| | Te 131m | | 6×10 ⁻⁴ |
| | Te 132 | | 3×10 ⁻⁴ |
| Terbium (65) | Tb 160 | | 4×10 ⁻⁴ |
| Thallium (81) | Tl 200 | | 4×10 ⁻³ |
| | Tl 201 | | 3×10 ⁻³ |
| | Tl 202 | | 1×10 ⁻³ |
| | Tl 204 | | 1×10 ⁻³ |
| Thulium (69) | Tm 170 | | 5×10 ⁻⁴ |
| | Tm 171 | | 5×10 ⁻³ |
| Tin (50) | Sn 113 | | 9×10 ⁻⁴ |
| | Sn 125 | | 2×10 ⁻⁴ |
| Tungsten (Wolfram) (74) | W 181 | | 4×10 ⁻³ |
| | W 187 | | 7×10 ⁻⁴ |
| Vanadium (23) | V 48 | | 3×10 ⁻⁴ |
| Xenon (54) | Xe 131m | 4×10 ⁻⁶ | |
| | Xe 133 | 3×10 ⁻⁶ | |
| | Xe 135 | 1×10 ⁻⁶ | |
| Ytterbium (70) | Yb 175 | | 1×10 ⁻³ |
| Yttrium (39) | Y 90 | | 2×10 ⁻⁴ |
| | Y 91m | | 3×10 ⁻² |
| | Y 91 | | 3×10 ⁻⁴ |
| | Y 92 | | 6×10 ⁻⁴ |
| | Y 93 | | 3×10 ⁻⁴ |
| Zinc (30) | Zn 65 | | 1×10 ⁻³ |
| | Zn 69m | | 7×10 ⁻⁴ |
| | Zn 69 | | 2×10 ⁻² |
| Zirconium (40) | Zr 95 | | 6×10 ⁻⁴ |
| | Zr 97 | | 2×10 ⁻⁴ |
| Beta and/or gamma emitting byproduct material not listed above with half-life less than 3 years. | | 1×10 ⁻¹⁰ | 1×10 ⁻⁶ |

Footnotes to Schedule A:

¹ Values are given only for those materials normally used as gases.

² μCi/gm for solids.

NOTE 1: Many radioisotopes disintegrate into isotopes which are also radioactive. In expressing the concentrations in Schedule A, the activity stated is that of the parent isotope and takes into account the daughters.

NOTE 2: For purposes of §30.14 where there is involved a combination of isotopes, the limit for the combination should be derived as follows:

Determine for each isotope in the product the ratio between the concentration present in the product and the exempt concentration established in Schedule A for the specific isotope when not in combination. The sum of such ratios may not exceed "1" (i.e., unity).

Example:

$$\frac{\text{Concentration of Isotope A in Product}}{\text{Exempt concentration of Isotope A}} + \frac{\text{Concentration of Isotope B in Product}}{\text{Exempt concentration of Isotope B}} \leq 1$$

[30 FR 8185, June 26, 1965, as amended at 35 FR 3982, Mar. 3, 1970; 38 FR 29314, Oct. 24, 1973; 59 FR 5520, Feb. 7, 1994]

§ 30.71 Schedule B.

| Byproduct material | Microcuries | Byproduct material | Microcuries |
|-----------------------------|-------------|------------------------------|-------------|
| Antimony 122 (Sb 122) | 100 | Cadmium 115m (Cd 115m) | 10 |
| Antimony 124 (Sb 124) | 10 | Cadmium 115 (Cd 115) | 100 |
| Antimony 125 (Sb 125) | 10 | Calcium 45 (Ca 45) | 10 |
| Arsenic 73 (As 73) | 100 | Calcium 47 (Ca 47) | 10 |
| Arsenic 74 (As 74) | 10 | Carbon 14 (C 14) | 100 |
| Arsenic 76 (As 76) | 10 | Cerium 141 (Ce 141) | 100 |
| Arsenic 77 (As 77) | 100 | Cerium 143 (Ce 143) | 100 |
| Barium 131 (Ba 131) | 10 | Cerium 144 (Ce 144) | 1 |
| Barium 133 (Ba 133) | 10 | Cesium 129 (Cs 129) | 100 |
| Barium 140 (Ba 140) | 10 | Cesium 131 (Cs 131) | 1,000 |
| Bismuth 210 (Bi 210) | 1 | Cesium 134m (Cs 134m) | 100 |
| Bromine 82 (Br 82) | 10 | Cesium 134 (Cs 134) | 1 |
| Cadmium 109 (Cd 109) | 10 | Cesium 135 (Cs 135) | 10 |
| | | Cesium 136 (Cs 136) | 10 |
| | | Cesium 137 (Cs 137) | 10 |
| | | Chlorine 36 (Cl 36) | 10 |